Working Together to Protect the Environment:
Nevada Mining Partnership Reduces Mercury Air Emissions by 75%

In recent years, EPA has supported voluntary partnership programs as effective alternatives to traditional regulatory approaches for achieving environmental protection. One such program spearheaded by EPA Region 9 and the State of Nevada Division of Environmental Protection in cooperation with several precious metal mining companies in the state is the Voluntary Mercury Air Emissions Reduction Program (VMRP). This program is yielding stunning results: it achieved a 40 percent reduction in mercury emissions from the state's four largest gold mining companies in the first year of the partnership and has reported a **75%** reduction in the second year (2003). These results have surpassed both expectations and the 2005 goal of a 50% reduction.

The State of Nevada ranks as the largest gold producer in the nation and the third-largest in the world.[1] In 2002, Nevada's gold mines turned out 7.73 million ounces of gold—80 percent of the total U.S. production—worth nearly $2.4 billion.[2] That same year, the state's four largest gold mining companies entered into an innovative partnership program with NDEP in cooperation with EPA Region 9 to significantly reduce mercury emissions, which are a byproduct of the production process. The voluntary program seeks to achieve significant, permanent, and rapid reductions in mercury air emissions from gold mining operations, and to do so at reasonable costs and through facility-specific approaches.

Mercury is a toxic, persistent, and bioaccumulative pollutant that affects the nervous system and has detrimental effects on both humans and wildlife. Once released into the atmosphere, this element circulates the globe and can move substantial distances from the emissions source. Atmospheric deposition in soil and water can result in accumulation in fish and wildlife and eventually in humans. Natural events, such as volcanic eruptions and geothermal vents also contribute to this process.

Early in 2000, EPA became aware of the significant mercury air emissions from mines reported in the 1998 Toxic Release Inventory (TRI) (published in 2000). Until then, an inventory of mercury emissions from mining operations in Nevada was not available. On review of environmental data, NDEP determined that the mercury emitted by the mines posed no imminent and substantial public health threat. However, the ore in Nevada is particularly high in mercury content, and NDEP and EPA believed that an effort to reduce mercury emissions from these operations was prudent.

Even though mercury is classified as a hazardous air pollutant under the Clean Air Act, there are no Federal regulatory requirements for mines to control these emissions. Nonetheless, many Nevada mining operations had voluntarily installed and were operating mercury air emissions controls. Considering the success of those control measures, the NDEP and EPA believed an

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[1] "Economic Overview of the Nevada Mining Industry, 2002," prepared by John L. Dobra for the Nevada Mining Association.

[2] Ibid.

opportunity existed to realize significant additional reductions. These voluntary efforts seemed compelling considering the traditional approach: establishing standards for the mines through EPA's Maximum Available Control Technology (MACT) regulatory process. A MACT requirement identifies and requires the use of the most effective emissions control technology and sets air emissions limits. Such a rulemaking process is lengthy and costly for the government and industry.

Thinking creatively, NDEP, EPA and the mines developed an appealing alternative that recognized the differences among the mining facilities. The voluntary program provided two tracks for participation: installing controls that represent the most effective emissions control technology (the "MACT Equivalent Track") or installing those or similar controls in addition to pollution prevention or waste minimization measures (the "Process Modification Track"). Both tracks give mining facilities the flexibility to develop site-specific, cost-effective approaches to reducing emissions. The goal under the "Process Modification Track" was to achieve at least a 33 percent reduction in mercury air emissions (relative to the baseline) by the end of 2003 and at least 50 percent by the end of 2005. The 40 percent reduction achieved in 2002 , followed by a 75% reduction in 2003, means the VMRP has not only surpassed the 2003 goal but has already surpassed the goal of a 50 percent emissions reduction by 2005.

As a result of the collaborative relationship that was formed between the mines, NDEP and EPA, the Voluntary Mercury Air Emissions Reduction Program was launched on June 12, 2002. NDEP stepped forward and became the lead for working with the mines to develop a formal voluntary partnership agreement and took responsibility for monitoring and reporting the results of the program.

The mining companies' emissions under the process modification track are measured against the baseline of 21,098 pounds annually of mercury air emissions. This baseline was established using emissions data collected from 1998 to 2001 (including TRI data as well as revisions to that data). In July 2003, the mines reported 12,743 pounds of mercury emissions for 2002, a 40 percent reduction from the baseline emissions. In 2004, the mines reported 2003 emissions totalling 5,396 pounds of mercury for the year– a 75% reduction from the baseline. The environmental results are especially significant, as these four mines were responsible for 90 percent of the mercury air emissions reported in the 1998 TRI.

Through this effective partnership, flexible, cost-effective approaches to reducing mercury air emissions have yielded significant results in a very short time frame. EPA, NDEP, and Nevada's gold mines have shown that collaboration can produce impressive environmental results.

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